

**PHASE DIVERSITY METHOD AND APPARATUS USING FOURIER
TRANSFORM SPECTROSCOPY**

ABSTRACT OF THE DISCLOSURE

A method for reducing a piston between a plurality of optical-collection devices configured to operate as a single optical device, such that the optical-collection devices are configured to capture select portions of a wavefront. The method includes pistoning an adjustable-optical path of at least one of the optical-collection devices through a plurality of steps; collecting a set of focused images and a set of defocused images for each step; Fourier transforming the first and second sets of images to generate respective first and second sets of spectral information for the wavefronts; deriving a set of wavefront errors based on the first and second sets of spectral information using a phase diversity algorithm; and deriving a piston value for the piston from the wavefront errors using a multi-color interferometry algorithm.

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